

## *Feia nota*, a new species of gobiid fish from Western Australia

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**Abstract** – *Feia nota* is described from the 17.7 mm SL holotype from Bessieres Island, Western Australia. It is distinguished from *F. nympha*, the only other described species of the genus, in having 16 pectoral-fin rays, no pelvic fraenum, mostly ctenoid scales, 26–27 scales in lateral series, and a distinctive coloration (head and body generally dark with series of pale spots on dorsal midline; pectoral fin hyaline; caudal fin brown with dark basal bar).

### INTRODUCTION

Smith (1959) erected the genus *Feia* to accommodate his new species *F. nympha* from Pinda, Mozambique. Lachner and McKinney (1979) redescribed the species based on a reexamination of the holotype and on additional specimens from the Seychelles, Indonesia and the Great Barrier Reef. They also reported on two specimens of a possibly undescribed species of the genus from Rapa Island, Austral Islands, but elected to not describe it.

In May 1996, the present authors and J.B. Hutchins surveyed shorefishes from the West Pilbarra Islands, Western Australia. Among the fishes collected was a single specimen of a *Feia* species, described herein as new.

### MATERIALS AND METHODS

Measurements to the snout tip were made to the midanterior tip of the upper jaw: standard length (SL) from the snout tip to the midposterior part of the hypural plate; head length from the snout tip to the posterior (vertical), fleshy edge of the operculum; and preanal, predorsal and prepelvic lengths from the snout tip to the anterior edge of the first spine base of the relevant fin. Head width was measured between the posterior edges of the preopercle, and head depth at the vertical through the preopercle. Eye diameter was measured horizontally where greatest. Bony interorbital width was the least width. Distance between the first and second dorsal-fin origins was measured between the anterior edges of the first spine base of each fin. Caudal peduncle depth was measured between the bases of the last segmented rays in the anal and the second-dorsal fins. Caudal peduncle length was

measured from the posterior edge of the base of the last anal-fin ray to the ventral edge of the caudal peduncle at the vertical through the posterior edge of the hypural plate. Fin ray lengths were measured from the bases of the rays to their tips. Caudal fin length was the length of the lowermost ray articulating with the upper hypural plate (*i.e.*, hypurals 3 + 4). Pectoral fin length was the length of the longest ray. Pelvic fin length was measured from the base of the spine to the distal tip of the fourth segmented ray.

The last segmented ray in the anal and second-dorsal fins is divided at its base and was counted as a single ray. Lateral scale series were counted along the midside from the pectoral-fin axil to the mid-base of the caudal fin. Transverse scale series were counted upward and forward from the anal-fin origin.

Osteological details were determined from an x-radiograph. The pattern of interdigitation of first dorsal-fin pterygiophores with neural spines is given as a first dorsal pterygiophore formula following the methods of Birdsong *et al.* (1988). Comparisons with other *Feia* species are based on data provided by Lachner and McKinney (1979) and the following specimens (institutional codes follow Leviton *et al.*, 1985): Comoros, ROM 56576 (1: 13.6 mm SL), ROM 56577 (1: 11.1 mm SL); Chagos, ROM 55113 (11.1 mm SL), ROM 55114 (2: 12.1–12.4 mm SL); Naira Islands, Banda Sea, USNM 216426 (1: 13.2 mm SL); Papua New Guinea, USNM 220107 (1: 14.8 mm SL), USNM 220108 (1: 13.2 mm SL); Tonga, USNM 339821 (1: 16.4 mm SL), USNM 339883 (5: 12.6–14.5 mm SL), USNM 340067 (5: 11.9–14.8 mm SL); Moorea, ROM 60711 (3: 13.2–14.8 mm SL); Rapa Iti, BPBM 17255 (1: 15.8 mm SL), BPBM 17300 (1: 15.2 mm SL).



## SYSTEMATICS

Family Gobiidae Cuvier, 1829

Genus *Feia* Smith, 1959*Feia nota* sp. nov.

Figures 1, 2, 3A

**Holotype**

WAM P.31440-001, 17.7 mm SL male, Western Australia, Bessieres Island, 21°45'02"S, 114°45'13"E, 1.5–2 m deep gutter in coral-rock reef with rock, coral rubble and sandy silt bottom and small caves in sides of gutter, 13–15 m, rotenone, R.D. Mooi, A.C. Gill, R.C. Miles and N. Williams, 15 May 1996 (field number RDM 96-23).

**Diagnosis**

A species of *Feia* (see *Remarks* below) with the following characters: pectoral-fin rays 16; no pelvic fraenum; scales mostly ctenoid, extending anteriorly to pectoral-fin axil; scales in lateral series 26–27;

tongue slightly bilobed; anterior row of preopercular neuromasts positioned relatively close to preopercular margin; gill opening extending anteriorly to vertical through about midway between posterior margins of preopercle and operculum; medial epaxial muscle fibres extending forward beyond lateral muscle fibres to vertical through pupil, the anterior margin of epaxial musculature convex; head depth 19.8% SL; orbit diameter 7.3% SL; bony interorbital width 5.1% SL; head and body generally dark with series of pale spots on dorsal midline; pectoral fin hyaline; and caudal fin brown with dark basal bar.

**Description**

Dorsal-fin rays VI + I, 9, all segmented rays branched; anal-fin rays I, 9, all segmented rays branched; pectoral-fin rays 16/16, all rays branched; pelvic-fin rays I, 5, all segmented rays branched; segmented caudal-fin rays 9 + 8; branched caudal-fin rays 7 + 6; upper unsegmented caudal-fin rays 6; lower unsegmented caudal-fin rays 6.

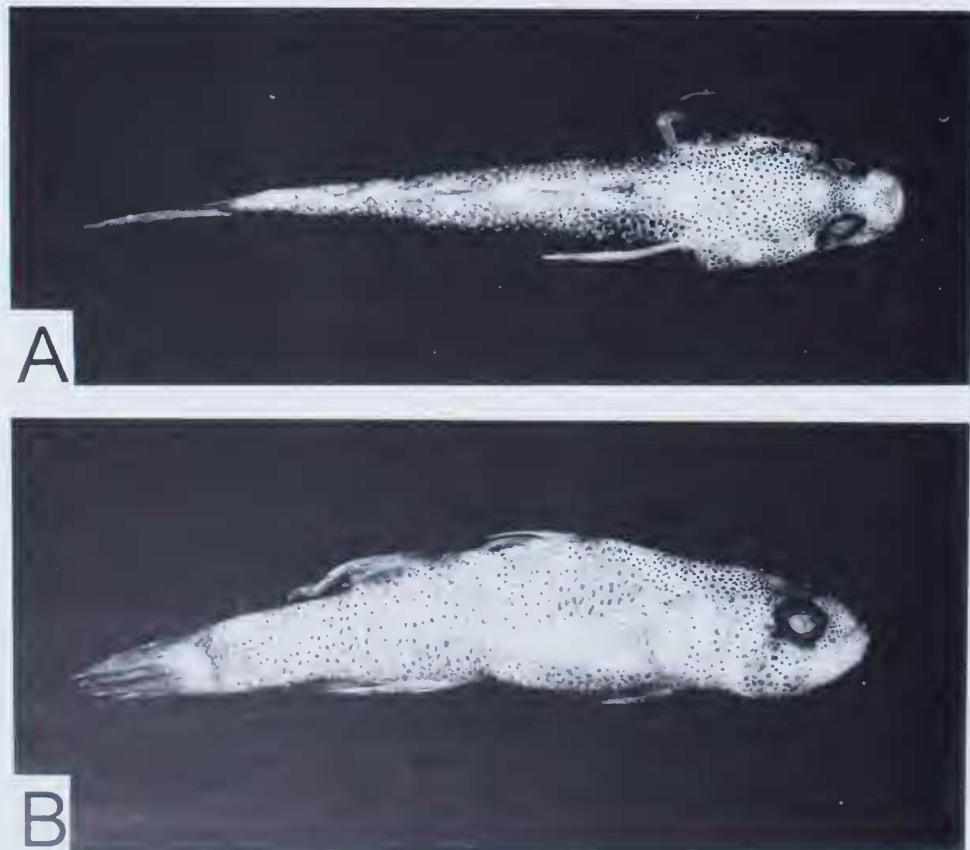


Figure 1 *Feia nota*, WAM P 31440-001, 17.7 mm SL male holotype, Bessieres Island, Western Australia, A, dorsal view; B, right lateral view. (Photographs by P. Crabb)

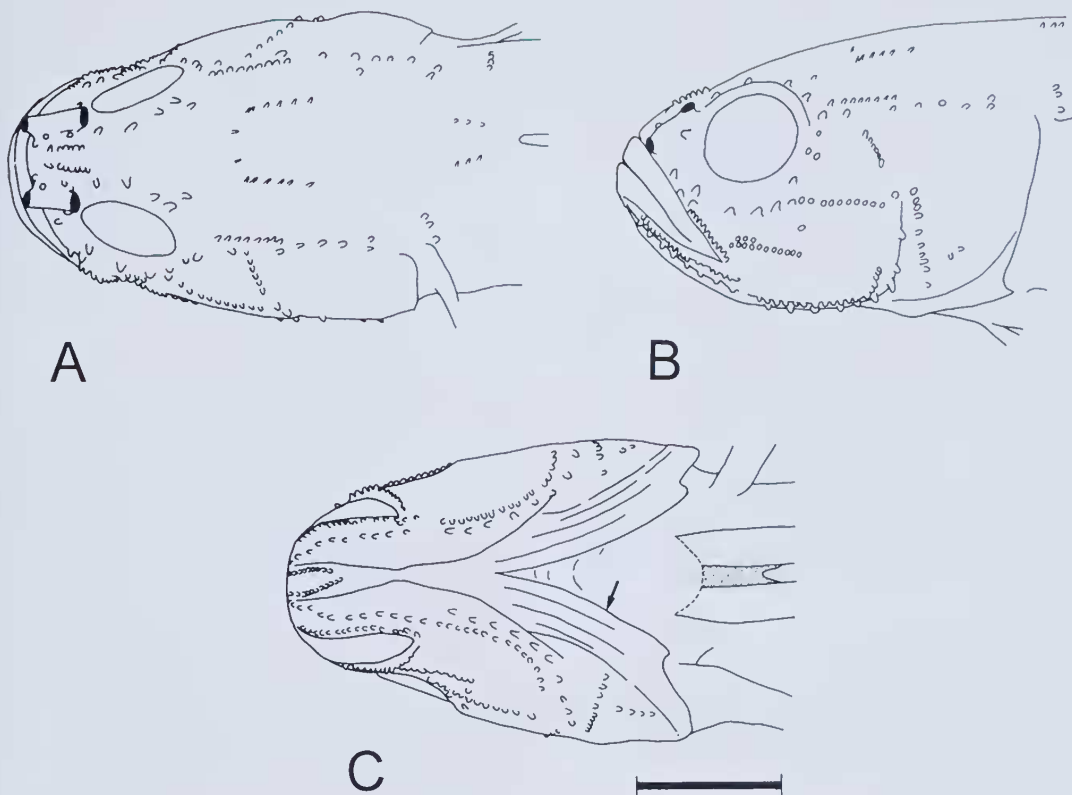


Figure 2 *Feia nota*, holotype, WAM P.31440-001, showing distribution of superficial neuromasts on the head in A, dorsal; B, lateral; and C, ventral view. Arrow and stippling in C indicate, respectively, anterior extent of right gill opening, and basal membrane connecting fifth segmented pelvic-fin rays. Scale bar = 2 mm.

Head, nape, prepelvic area and narrow area of body immediately below dorsal fins naked; scales on body and caudal peduncle mostly large and tenoid, becoming smaller, less regularly arranged and cycloid on belly, immediately adjacent to anal-fin base, and on dorsal part of body (approximately above oblique line passing from pectoral-fin axil to base of last second-dorsal-fin ray); lateral scale series 26/27; transverse scale series 13/12.

Cephalic sensory pores absent; pattern of superficial neuromasts on head as shown in Figure 2.

Gill rakers relatively long and slender, 3 + 10; gill opening extending anteriorly to vertical through about midway between posterior margins of preopercle and operculum (Figure 2C); pseudobranch filaments 5; tongue slightly bilobed, the tip free; medial epaxial muscles extending forward beyond lateral muscles to vertical through pupil, the anterior margin of epaxial musculature convex (Figure 3A).

Pelvic-fin rays reaching slightly beyond anus; fifth

segmented pelvic-fin rays broadly united basally by fin membrane, pelvic fraenum absent (Figure 2C).

Each premaxilla with outer row of about 6 or 7 caninoid teeth, the lateralmost few teeth enlarged and recurved, followed by 1 or 2 rows of small villiform teeth, and innermost row of slightly enlarged (about equal to medial teeth of outer row), depressed, caninoid teeth; each dentary with outer row of 4–6 caninoid teeth, the lateralmost 1 or 2 teeth strongly enlarged and recurved, followed by 1 or 2 rows of small villiform across front of dentary, and innermost row of slightly enlarged (about equal to medial teeth in outer row), depressed, caninoid teeth, the innermost row of teeth extending posteriorly on to sides of jaw; vomer, palatine and tongue edentate.

Vertebrae 10 + 16; first dorsal pterygiophore formula 3-22110; anal pterygiophores in front of first haemal spine 2; pu2 neural and haemal spines somewhat spatulate.

As percentages of SL: head length 32.3; orbit diameter 7.3; head width 20.9; bony interorbital

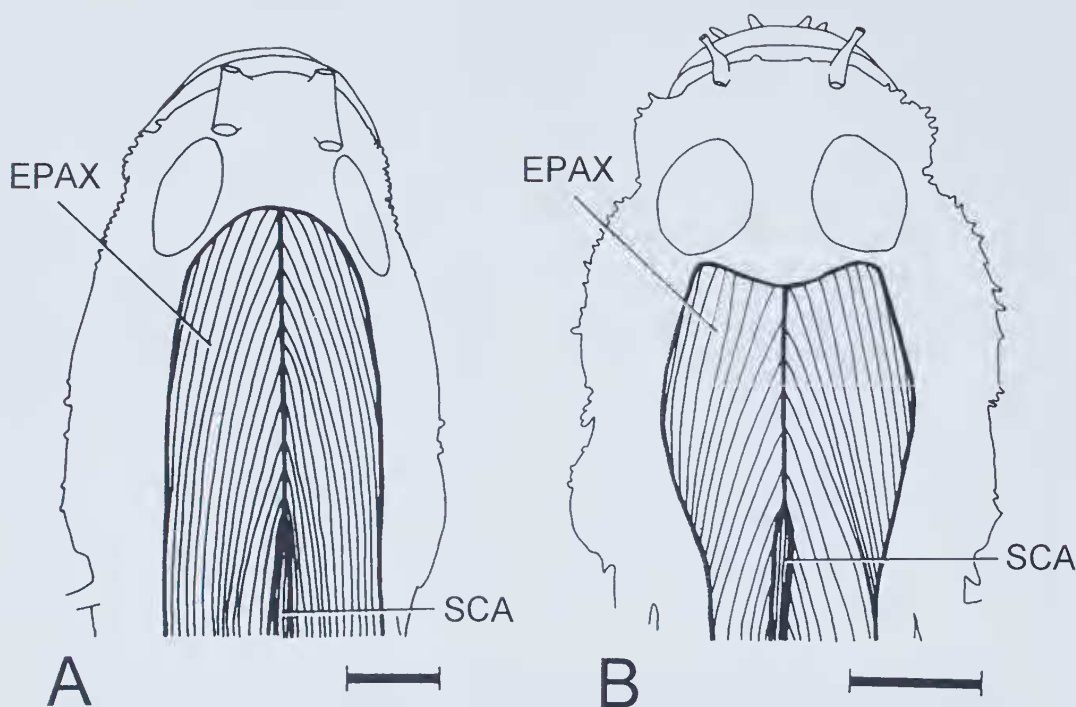


Figure 3 Anterior epaxial musculature in A, *Feia nota*, holotype, 17.7 mm SL, WAM P.31440-001; and B, *Feia* sp., 14.8 mm SL, USNM 220107, Hermit Island, Papua New Guinea. EPAX, epaxial muscle; SCA, supracarinalis anterior muscle. Scale bars = 1 mm.

width 5.1; head depth 19.8; body depth at pelvic origin 20.3; body depth at anal-fin origin 18.6; predorsal length 39.5; prepelvic length 30.5; preanal length 58.8; first-dorsal-fin origin to second-dorsal-fin origin 20.9; caudal peduncle depth 13.6; caudal peduncle length 22.6; length of second dorsal-fin base 19.8; length of anal-fin base 18.1; length of third spine in first dorsal fin 14.1; length of third last segmented ray in second dorsal fin 16.4; length of third last segmented anal-fin ray 18.6; pelvic fin length 26.0; pectoral fin length 23.7; caudal fin length 28.2.

Live coloration (based on colour photographs of holotype when freshly dead; see Mooi, 1996): head and body pale brown with dense covering of melanophores and brown chromatophores; melanophores and brown chromatophores largest on head, aligning to form three dark bars; first bar narrow, extending ventrally from anteroventral part of orbital rim to just behind corner of mouth; second bar broad, extending from posteroventral part of orbital rim to ventral (anterior) part of preopercle; third bar broad, extending vertically from anterior part of nape through posterior edge of preopercle; iris reddish brown; scales dark brown on edges, giving reticulate pattern; dorsal part of head and body with series of eight pale cream to white spots;

first spot above posterior edge of opercle; second spot above vertical through pectoral-fin base; third spot between bases of third to fifth dorsal-fin spine, encroaching slightly on to first-dorsal-fin base; fourth spot between posterior part of first dorsal fin and base of first segmented ray of second dorsal fin, encroaching well on to basal part of both fins; fifth spot between bases of third and fifth segmented rays of second dorsal fin, encroaching well on to basal part of fin; sixth spot indistinct, between bases of seventh and ninth segmented rays of second dorsal fin and encroaching well on to basal part of fin; seventh spot indistinct, just behind termination of second dorsal fin; eighth spot on posterior part of caudal peduncle; second, intermittent series of indistinct pale brown spots immediately beneath dorsal series of spots, these aligned between dorsal spots to give indistinct reticulate pattern; first dorsal fin brown basally (excepting pale spots; see above), with dense scattering of brown chromatophores, the distal third of fin pale cream to white; second dorsal fin with dense scattering of brown chromatophores, the base of fin brown (excepting pale spots; see above) and distal third to half of fin pale yellowish brown; anal fin brown, becoming yellowish brown distally, with dense scattering of brown to red chromatophores; caudal fin with dark greyish

brown basal bar, the remainder of fin brown with dense scattering of brown to red chromatophores; pectoral fins hyaline; pelvic fins hyaline, with red to brown melanophores along pelvic-fin spine and on basal part of segmented rays.

Preserved coloration: similar to live coloration, except paler.

### Comparisons

*Feia nota* differs from congeneric specimens described by Lachner and McKinney (1979) and examined by us (see Materials and Methods) in the following: pectoral-fin rays 16 (versus 14–15); pelvic fraenum absent (versus weakly to moderately developed fraenum present or absent); scales mostly ctenoid (versus entirely cycloid), extending anteriorly to pectoral-fin axil (versus not extending anteriorly beyond vertical through origin of second dorsal fin); scales in lateral series 26–27 (versus 14–25); tongue slightly bilobed (versus rounded to truncate); anterior (termed "outer" by Lachner and McKinney, 1979) row of preopercular neuromasts positioned relatively close to preopercular margin (versus well in advance of preopercular margin); gill opening extending anteriorly to vertical through about midway between posterior margins of preopercle and operculum (versus to slightly below and in front of pectoral-fin insertion); medial epaxial muscle fibres extending forward beyond lateral fibres to vertical through pupil, the anterior margin of epaxial musculature convex (versus medial epaxial muscle fibres extending to vicinity of posterior edge of eye, with lateral epaxial fibres extending further forward, resulting in concave anterior margin to epaxial musculature; cf. Figures 3A, B); head depth 19.8% SL (versus 13.5–18.5% SL); orbit diameter 7.3% SL (versus 5.0–6.2% SL); and bony interorbital width 5.1% SL (versus 2.5–4.0% SL). Moreover, it differs markedly from congeneric specimens in the following coloration details: head and body generally dark with series of pale spots on dorsal midline (versus head and body generally pale with dark spots, or head and body dark and mottled with dark, broad, lateral trunk stripe just below midline); pectoral fin hyaline (versus hyaline with small to large brown spot basally on upper fin rays); and caudal fin brown with dark basal bar (versus pale with irregular, sparse mottling, sometimes with dark basal bar).

### Remarks

As is the case for the vast majority of gobiid genera, the generic status of *Feia* has not been evaluated in the context of a phylogenetic analysis. Such a study is in progress by the present authors. The recognition of *Feia* as distinct from similar genera, such as *Gobiopsis* Steindachner, should, therefore, be regarded as provisional. A revision of *Feia* is also under study by the present authors;

morphological variation in specimens examined by us suggests that they are probably referable to several different species.

The discovery of *F. nota* and our examination of other *Feia* specimens necessitates the following slight modification of the diagnosis provided by Lachner and McKinney (1979: 11) for *Feia*: head barbels absent; two short rows of superficial neuromasts on chin arranged in V-shaped pattern; at least some superficial neuromasts on head and body borne on elongate, flap-like papillae; superficial neuromasts arranged in short regular columns on body; fleshy cheek fold absent; cephalic sensory pores absent; second dorsal-fin rays 1,7–9; anal-fin rays 1,8–9; pectoral-fin rays 14–16; at least head, nape and dorsal area of body naked; and sickle-shaped dark mark at base of pectoral fin absent.

### Etymology

The specific epithet is from the Latin for 'mark' and alludes to the pale spots on the dorsal part of the body. Gender is feminine.

### ACKNOWLEDGEMENTS

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